LISTING OF CLAIMS:

Please amend the claims as follows:

Cancel claims 1-11.

Add the following new claims:

12. (New) A method for balancing traffic across paths connecting a network to the Internet comprising:

forming a connection between a home network and a large network which connects to a plurality of networks, wherein the connection comprises a plurality of paths (p), carrying traffic in the form of data packets between the home network and the large network, wherein each path has a path load (x_i), which is the amount of traffic allocated to a path (p), an available capacity (c_i), which is the amount of traffic that the path (p) can transmit, and a low capacity boundary (l_i) and a high capacity boundary (h_i), which are the measured high and low capacity bounds of the available capacity (c_i);

measuring the path load (x_i) of each of the plurality of paths (p);

measuring the high capacity boundary (h_i) of each of the plurality of paths (p);

comparing the path load (x_i) and the high capacity boundary ($h_i(0)$) for each of the plurality of paths (p);

selecting one of the plurality of paths (p), wherein the plurality of paths (p) comprises the selected path (p_0) and other paths (p_i), wherein the selected path (p_0) has an initial overload ($x_0(0)$),

and wherein the overload exists when the initial selected path load (x_0) is greater than the initial selected path high capacity boundary (h_0); and

choosing the path load (x_i) for each of the plurality of other paths (p_i) using a fractional allocation strategy, wherein the fractional allocation strategy comprises:

(a) indexing the other paths (p_i) by i, wherein i is a set of integers from 1 to P, wherein P is the total number of other paths (p_i);

(b) associating a plurality of pinning intervals with a counter (t), wherein the initial value of the counter is set to zero ($t = 0$) and there are a total of N pinning intervals;

(c) calculating a portion ($y(t)$) of the initial selected path overload ($x_0(0)$) to be off-loaded and distributed to the other paths (p_i) using a bi-sectional search strategy and skipping to step (f);

(d) calculating an updated selected path overload ($x_0(t)$), wherein the updated selected path overload ($x_0(t)$) is equal to the initial selected path overload ($x_0(0)$) less the sum of the low capacity boundary for i path(s);

(e) calculating the portion ($y(t)$) of the updated selected path load ($x_0(t)$) to be off-loaded and distributed to the other paths (p_i) using a bi-sectional search strategy;

(f) measuring the low capacity boundary (l_i) and the high capacity boundary (h_i) of the other paths (p_i) at pinning interval (t);

(g) distributing the portion ($y(t)$) of the initial selected path overload or the updated selected path load ($x_0(t)$) to the other paths (p_i), wherein the portion of the traffic ($y(t)$) is distributed to the other paths (p_i) using the equation

$$x_i = l_i(t) + \frac{h_i(t) - l_i(t)}{\sum_{i=1}^{P}(h_i(t) - l_i(t))}(y(t))$$

and

(h) stopping if there are no more pinning intervals ($t = N$), otherwise increasing the numerical value of the counter by one (1) and go to step (d).

13. (New) The method for balancing traffic across paths connecting a network to the Internet according to claim 12, wherein the bi-sectional search strategy chooses the portion ($y(t)$) of the traffic to be off-loaded and distributed using the equation:

$$y(t) = \min\left\{(0.5)\left[\sum_{i=1}^{P}(h_i(t) - l_i(t))\right], (x_0(t))\right\}.$$

14. (New) The method for balancing traffic across paths connecting a network to the Internet according to claim 12, wherein the amount of traffic from the home network to the large network over the selected path (p_0) is measured using flow level measurements or Simple Network Management Protocol (SNMP).

15. (New) The method for balancing traffic across paths connecting a network to the Internet according to claim 12, wherein the initial selected path high capacity boundary ($h_0(0)$) is measured using active probes, or passive measurements of traffic details.

16. (New) The method for balancing traffic across paths connecting a network to the Internet according to claim 12, wherein the initial selected path high capacity boundary ($h_0(0)$) is

measured using Transmission Control Protocol (TCP) Synchronize/Acknowledgement (SYN/ACK) response time.

17. (New) The method for balancing traffic across paths connecting a network to the Internet according to claim 12, wherein the initial selected path high capacity boundary ($h_0(0)$) is measured using Round Trip Time (RTT), and loss measurements.

18. (New) The method for balancing traffic across paths connecting a network to the Internet according to claim 12, wherein the initial selected path low capacity boundary ($l_0(0)$ is equal to 0 and the initial selected path high capacity boundary ($h_0(0)$) is equal to 1.